THAT WHICH IS CLAIMED:

1. An optical fiber having an elevated threshold for stimulated Brillouin scattering comprising:

a longitudinally extending core having a first index of refraction and a first acoustic wave propagation velocity;

a cladding surrounding said core and extending lengthwise therealong, said cladding having a second index of refraction that is less than the first index of refraction of said core, said cladding also having a second acoustic wave propagation velocity that is less than the first acoustic wave propagation velocity in order to guide optical waves through said core while antiguiding acoustic waves; and

an irregular coating disposed on said cladding that varies in a lengthwise direction in order to alter a mode profile of the acoustic waves, wherein said irregular coating is comprised of an acoustically dampening material that is acoustically matched to said cladding.

2. An optical fiber according to Claim 1 wherein said irregular coating is comprised of an acoustically dampening material that is acoustically matched to said cladding.

3. An optical fiber according to Claim 1 wherein said irregular coating has a density that varies randomly in a lengthwise direction.

4. An optical fiber according to Claim 1 wherein said core comprises aluminum oxide as a dopant.

5. An optical fiber according to Claim 1 wherein said cladding comprises a dopant selected from the group consisting of fluorine and boron oxide.

6. An optical fiber according to Claim 1 wherein said cladding has a lateral thickness that varies irregularly in a lengthwise direction in order to alter a mode profile of the acoustic waves.